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Watershed Sentinel

We Can Do It!

Environmental News from BC & Beyond

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Watershed Sentinel

April | May 2020

Vol. 30 No. 2

Features

Rebooting Building

Engineers are re-examining their responsibilities in the light of the climate & extinction crises.

Return to the Grassroots

In this time of globalized everything and cataclysmic change, the quiet, dedicated work of everyday people working for change often gets ignored. This issue celebrates the victories, people, and crucial work of the living network we call the grassroots.

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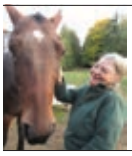

Editorial

Delores Broten

Pitfalls

For years, some of us – historians, democracy advocates, ecologists – have been sounding the alarm about the delusion and overreach of globalization.

It has not been a popular or an easy message, trying to warn of the pitfalls of this alienated, extractive, money-driven way of life. But meanwhile, one of our relations, one of many on the watchlist, decided we had created the perfect habitat – a fools' paradise for it. Constant global travel, crowded cities, loads of festivals and parties and social events. Hello, pandemic!

The need for community resilience and self-sufficiency is now glaringly clear. The massive global supply chain is breaking, and slowly manufacturers are re-tooling to meet local needs. My favourites are the distilleries making alcohol sanitizers, and employee-owned Harmac pulp mill making the fibre for medical masks and gowns.

It has been amazing to watch political leaders deliberately throwing the economy overboard to try to slow the virus' spread. Now governments are starting to roll out some aid to the hardest hit, the millions of workers with no social security. We'll be watching closely to see if this huge upheaval leads to more corporate welfare or to a fundamental societal value-shift. Time to talk!

American social change organizations have developed five principles for COVID-19 relief, prioritizing health and aid to people, not corporations, while supporting the evolution of a democratic and regenerative economy. It's a start.

And in the even bigger picture, are the words of columnist Gwynne Dyer: "But here's a silver lining, if you want one. In every country, we have collectively decided, without even an argument, that we care more about the lives of our fellow citizens than we do about the damned economy."

—Delores Broten, Comox, BC, March 2020

At the 'Shed

Our small team is continuing on, grateful for the ability to work remotely, and sorting out our techno-picture to be able to keep doing so with more ease. Our thoughts are with everyone right now but especially with health- and care-workers and family caregivers all over the world.

The next issue of WS will delve into the environmental impacts of the coronavirus pandemic – emissions, impact on nature, and on our habits. Your ideas are welcome.

Seeds We Sow: Watershed Sentinel Books has partnered with Dan Jason of Salt Spring Seeds to publish our fourth book: *Changing the Climate with the Seeds We Sow.* It profiles 21 nutritious, energizing, time-tested and easy-to-grow plants for building home and community-scale food resiliency. It can be ordered directly from us by phone, mail (cheques to "Watershed Sentinel"), or online: *www.watershedsentinel.ca/changing-the-climate-with-the-seeds-we-sow*

US drinking water

Pervasive PFAS

The contamination of US drinking water with toxic fluorinated chemicals known as PFAS has been "dramatically underestimated," according to a report by environmental watchdog group Environmental Working Group (EWG). Recent laboratory tests found PFAS in the drinking water of dozens of US cities including Miami, Philadelphia, New Orleans, and New York City. EWG believes the "forever chemicals," which don't break down in the environment, are now detectable in all major US water supplies. PFAS was used in Teflon, Scotchguard, firefighting foam, and other industrial processes and is linked to cancers, liver damage, and other health problems.

—www.theguardian.com
January 22, 2020

Dicamba

Farmer wins big

Missouri peach farmer Bill Bader has won $265 million in a lawsuit against the former Monsanto Co. and chemical giant BASF. A unanimous jury awarded Bader $15 million in compensatory damages and $250 million in punitive damages for extensive damage from Dicamba, a herbicide sprayed by neighbouring farmers that drifted into the Bader orchard, killing 30,000 peach trees. It's the first of a series of expected lawsuits over claims that the companies are responsible for damage from Dicamba that razed orchards, gardens, and organic farm fields in multiple states.

—www.sierraclub.org
February 25, 2020

LNG marine fuel

Bait and Switch

LNG for marine shipping turns out to be worse than fuel oil for the climate. The methane released by container and cruise ships operating on liquefied natural gas (LNG) makes them a bigger climate threat than the heavy fuel oil vessels they're replacing, according to a paper by the International Council on Clean Transportation and STAND.earth. The report found that although the new generation of LNG marine engines release 25% less carbon dioxide per unit of propulsion power, they leak 70-80% more carbon and methane than the least-polluting traditional fuel, measured "well-to-wake" in a full life cycle analysis.

—www.theenergymix.com
January 29, 2020

Long acid trip

Forests Recover

Forest soils in the eastern US are slowly recovering from acid rain. Jennifer Knoepp, a researcher with the US Forest Service, has found that since the US Clean Air Act of 1970, sulphate levels in forest soils in the southern Appalachian Mountains have slowly dropped, allowing the region's forests to rebound from damage caused by acid rain, which can harm soil microbes and bind nutrients in soil so plants can't use them. Streams also showed improved water quality. "However, soils and streams still exhibit chemical imbalances. This suggests recovery from decades of acid rain is a long-term process," Knoepp said.

— Alliance of Crop, Soil and Environmental Science Societies
February 5, 2020

A runway too far

Heathrow Ruling

Plans for a third runway at the London Heathrow airport in the UK have been ruled illegal by the country's court of appeal because they did not take into account government commitments to tackle the climate crisis. The decision comes a time when public concern over climate change is rising fast and the UK has set a target of net zero emissions by 2050.

—www.theguardian.com
February 27, 2020

Mother of us all

Ancient Worms

Scientists say new fossil evidence of a prehistoric worm-like creature – half the size of a grain of rice and resembling a teardrop-shaped jellybean – shows an early relative of humans and a vast array of other animals. The tiny creatures are one of the earliest examples of a bilateral organism: with a front, back, and a plane of symmetry that results in a left and right side, and a gut that opens on each end. That makes the organisms, named *Ikaria wariootia*, the shared ancestry of mammals, fish, insects, birds, and reptiles.

—www.theguardian.com
March 23, 2020

Letters

Right to repair snapshot

I really enjoyed the last issue's article on right to repair, having just undergone a fight with Nikon Canada over its CoolPix digital cameras. I have owned three of these things, made in several successive years, and the same part has broken on each one. Nikon denies having a design flaw built in. I have saved all the hilarious robot and robot-like emails from Nikon, when I was contacted by three different entities demanding payment to fix something that was poorly designed. Even after sending them numerous links to forums of complaint about the same problem, they refused to fix the camera without payment (that was nearly the original camera cost). So I've gone back to 35mm.

—T. Fairfax
Cyberspace

Fast transit transition

©Akshat Aranya

Although the article on electric vehicles in the last issue was excellent, I am disappointed by the Fraser Basin Council's suggestion that shifting space to bus lanes, protected bike lanes, and delightful spaces for walking must be slow. In fact re-allocating road space is succeeding in rapidly reducing GHG footprint in cities like Paris, Amsterdam and other cities and towns with the political will to act. When there is less space for private automobiles, people drive less and burn less fossil fuels – traffic disappears. And providing electric charging for a shrinking number of cars is logically easier.

Many government funded institutions are denying the science of disappearing traffic and delaying effective climate action. As young climate strikers frequently remind us, we must act in our own communities, and force higher levels of government to tell the truth and act now.

—Eric Doherty
Victoria BC

Needed: sustainable world

Environmentalists have always touted limits to growth as to what is needed to reverse climate change and the destruction of the biosphere. Ironically, the COVID-19 pandemic has already resulted in cleaner air, lower CO_2 emissions and less pollution. Now we need to find a way for the population to carry on in an economy no longer dependent on growth. Solutions must include reversing what has been a steady increase of income inequality by significantly raising taxes for the wealthy and erasing debts for those who have no hope of ever paying them.

It is only March of the first year of a new decade and already we have seen remarkable shocks to the global system, including a political assassination, the shooting down of an international airliner, massive wildfires in Australia and now a pandemic that is devastating the economy and threatens to kill millions. As the COVID-19 virus continues to spread, we also face the increased potential for more climate change shocks, such as intense storms, floods, and more fires.

People evacuated to community centres due to flooding would no longer be able to maintain social distancing. Another fire season like we had in 2017 and 2018 could pose more risks.

The pandemic has exposed all the flaws in the capitalist system that has siphoned off most of the wealth from the majority into the hands of the few. Canada's society, which is heavily dependent on oil, gas, tourism, film production and trade with the US, will need to morph into something closer to a more sustainable and equitable lifestyle.

—Jim Cooperman
Lee Creek BC

LNG boycott?

With all eyes on Wet'suwet'en territory, here's a thought for the day: The end of the line for Coastal Gas Link is the Royal Dutch Shell LNG refinery in Kitimat – has there been any discussion of a boycott of all the products and subsidiaries of Royal Dutch Shell? It's easy to google Royal Dutch Shell and locate all its subsidiaries, such as Shell Canada, Jiffy Lube, Penzoil, etc.

—Robbie Newton
Victoria, BC

The Watershed Sentinel welcomes letters

but reserves the right to edit for brevity, clarity, legality, and taste. Anonymous letters will not be published. Send your musings and your missives to:

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or online at *www.watershedsentinel.ca*

New regs for whales

Make It Right

Canada will adopt new rules to protect critically endangered North Atlantic right whales, Fisheries Minister Bernadette Jordan has announced. The measures, drafted with input from the fishing industry, Indigenous groups, and scientists and environmental groups, will aim to reduce ship strikes and fishing gear entanglement, the main causes for the whales' population decline. The changes are needed because the whales' migration patterns in Canadian waters have become difficult to predict, Jordan said, but they won't increase fishing closures in the Gulf of St. Lawrence and Bay of Fundy. Since June 2017, 21 whales have died in Canada and nine in the US, prompting warnings that the species is on its way to extinction.

—www.halifaxtoday.ca
February 27, 2020

Slavery lawsuit

Accountability

Vancouver-based mining firm Nevsun Resources can be sued for slavery, forced labour, and crimes against humanity, the Supreme Court of Canada has ruled. The decision ends Nevsun's efforts to quash a lawsuit started in 2014 by three Eritrean refugees who allege they were forced to work at a facility owned by Nevsun and the Eritrean government under intimidation and threats of torture. As involuntary conscripts, the plaintiffs told the courts they had spent 11, 14, and 17 years respectively in forced military labour before escaping in 2011. Experts say the ruling could change how Canadian companies do business abroad.

—www.huffingtonpost.ca
March 1, 2020

Going for a clean crunch

Glyphosate

Kelloggs says its subsidiary, Kellogg Canada, will follow the parent company in working with suppliers to end the use of glyphosate on crops to dry them before harvest. The phase-out will be complete by the end of 2025, according to a company blog post. Over 25 million kilograms of glyphosate-based herbicide are used every year in Canada to control weeds, kill undergrowth in forests, and clear roadsides and train tracks. In recent years, lawsuits stemming from the link between glyphosate and non-Hodgkin's lymphoma have multiplied.

—www.nationalobserver.com
February 3, 2020

Bankers in washing ceremony

Healing BMO

A group of 15 Bank of Montreal representatives were invited to a washing ceremony in the Heiltsuk community of Bella Bella, in an effort to heal damage caused by the erroneous arrest and handcuffing of Maxwell Johnson, a 56 year-old Indigenous man, and his 12-year-old granddaughter, at a Vancouver BMO branch in December. The BMO group were given blankets, led around the central fire of the community's big house, and listened to community members speak, including Johnson, who shouted into a microphone, "You guys hurt me. You hurt my family. You hurt the whole community." The arrests were called an example of racial profiling, and prompted protests and international media attention.

—www.cbc.ca
March 4, 2020

Murky waters

Fish Farms

Following outcry from the salmon farming industry, the election promise by the Trudeau government to "develop a responsible plan to transition from open net pen salmon farming in coastal waters to closed containment systems by 2025" has atrophied to a plan to develop a transition plan by 2025. Stan Proboszcz of Watershed Watch Salmon Society, called the change in language "borderline deceitful," and conservation groups say wild stocks can wait no longer for open water salmon farms to be removed.

—www.thenarwhal.ca
Febrary 13, 2020

Undeterred

Tsleil-Waututh Nation will appeal Coldwater decision

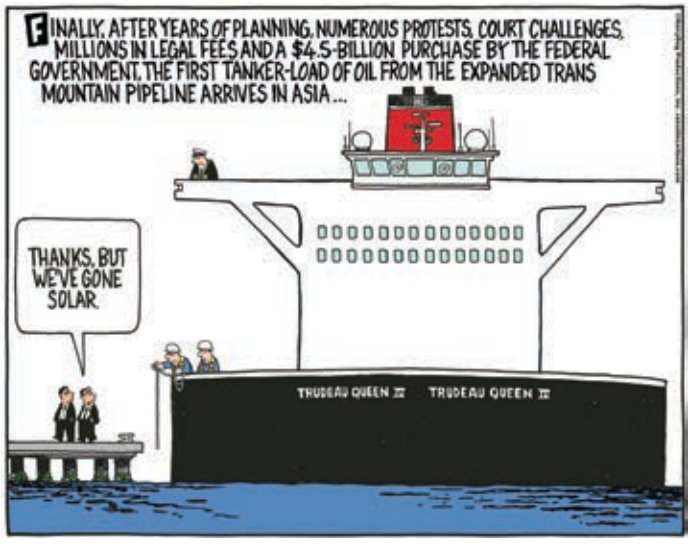
Tsleil-Waututh Nation press release, March 5, 2020

The Supreme Court of Canada has denied leave to appeal a decision by the Federal Court of Appeal from September 4th, 2019 which significantly limited the grounds that the First Nations, including Tsleil-Waututh, could argue in the recent Coldwater case. Tsleil-Waututh announced that they would appeal the Coldwater decision, which upheld the approval of the Trans Mountain Expansion Project (TMX) after finding consultation to be adequate.

"We took this issue to the Supreme Court of Canada not only to stand up for our inherent and constitutionally protected rights, but also to make sure that Canada follows their own laws when making decisions," said Tsleil-Waututh Chief Leah Sisi-ya-ama George-Wilson. "We are disappointed in this result, but our opposition remains unchanged. We will be appealing the consultation case to the Supreme Court of Canada. This isn't over by a long shot."

In the leave decision, Tsleil-Waututh and others argued the Federal Court of Appeal (FCA) made a legal error by raising the legal test applicable to leave decisions, thereby excluding grounds that were not about Indigenous consultation from the FCA's Coldwater case. The case would have dealt with important implications on the relationship between the government and the courts in a constitutional democracy, and could have impacted decisions beyond First Nations upholding their Aboriginal rights. The grounds the FCA excluded from the consultation case included:

- Canada's failure to consider marine shipping throughout Canada's Exclusive Economic Zone in the environmental assessment and final decision on TMX;
- Failing to comply with the *Canadian Environmental Assessment Act, 2012* and *Species at Risk Act* in relation to the Southern Resident Killer Whales;
- Relying on stale economic evidence and ignoring fresh evidence that the project is uneconomic; and
- Failing to consider TWN's Aboriginal title and rights by refusing to justify infringement of rights or obtaining consent.



"We believe that Canada should follow their own laws when reviewing projects such as TMX.

"Because of this decision, Canada's failure to apply the *Canadian Environmental Assessment Act, 2012* and the *Species at Risk Act* will put the endangered Southern Resident killer whales at greater risk of extinction. Canada's reliance on stale-dated economic evidence will not be examined, in spite of the fact that the oil and gas industry in Canada is in a decline, and TMX is no longer needed nor economically feasible at the new $12.6 billion construction cost. This will leave Canadian taxpayers on the hook for what will likely become a stranded asset," said Chief George-Wilson.

The leave to appeal the Coldwater case will be filed in the next few weeks. It will raise important issues about the role of the courts in reviewing Indigenous consultation. In Coldwater, the FCA took a new approach to reviewing consultation cases, deferring to federal Cabinet's own assessment about whether consultation was adequate.

Dam Big Problem

Muskrat Falls report slams Nalcor CEO, province

by Gavin MacRae

On March 10, the long-awaited 1,000-plus page final report of the Muskrat Falls inquiry became public, revealing a project so misguided and predetermined that the Government of Newfoundland and Labrador "failed in its duty to ensure that the best interests of the province's residents were safeguarded."

The report's executive summary states the Government of Newfoundland and Labrador did not prove a business case for Muskrat Falls. Instead, the province placed faith in Nalcor Energy, a provincial crown corporation created in 2008, and tasked with developing potential electricity generation at Gull Island and Muskrat Falls, on the Churchill River in Labrador.

Nalcor's answer was the Muskrat Falls Project, which, upon completion, will include a 824-megawatt hydroelectric dam on the Churchill River in Labrador, an overland and subsea transmission line between the dam and Newfoundland, and a second transmission line between the Muskrat Falls dam and a generating plant at Churchill Falls, Labrador.

Nalcor rammed through the project despite a mandate to "conduct a comprehensive study of all potential long-term electricity supply options in the event that the Lower Churchill project does not proceed."

In doing so, the corporation exploited the trust given to them, the report said, by "frequently concealing information about the project's costs, schedule and risks" in order to present the Muskrat Falls project to the province and the public as the lowest-cost option for electricity.

Cost estimates for the project – appraised at $7.4B in 2012, and currently sitting at $12.7B – were "clearly influenced by optimism bias, strategic misrepresentation, and political bias."

The project now accounts for roughly a third of Newfoundland and Labrador's debt.

"The decisions Nalcor made to reduce the cost estimate must be seen as part of a pattern of questionable decisions that systematically tended to overstate the Project benefits, understate its cost and disregard alternatives," the report reads.

Exempted from utility regulator

Deciding what option would result in the least expensive power for consumers would normally fall on the Public Utilities Board, Newfoundland and Labrador's utility regulator. But because the Lower Churchill Project had been exempted from this oversight by an Order in Council in 2000, the choice was left to Nalcor. In arriving at a decision, the report found Nalcor used "questionable justification" in screening out other potential options including importing electricity from Québec, natural gas from the Grand Banks, wind power, smaller hydro sites, and electricity conservation and demand management.

At Nalcor's helm was then-CEO, Edmund Martin. With a background in oil and gas, limited experience in megaprojects, and no experience in hydro or transmission projects, Martin nonetheless significantly shaped corporate culture at Nalcor, said the report. His zealousness for the Muskrat Falls project "resulted in a combination of unrealistic optimism, a willingness to misrepresent costs, schedule and risk, and an inability to change course when things were going wrong."

Martin's core management team, with one exception, also had no experience in hydroelectric generation or transmission projects.

"It is noteworthy that ratepayers on the Island of Newfoundland, who are responsible for repaying the cost of the Project through electricity rates, face the prospect of greatly increased power bills when the Project comes on-line," the report notes.

The report has been referred to police and the provincial justice department.

Idle Some More

A novel climate solution in the time of COVID-19

by David Suzuki

In his marvellous 1932 essay, "In Praise of Idleness," philosopher Bertrand Russell wrote, "I think that there is far too much work done in the world, that immense harm is caused by the belief that work is virtuous." His words could provide direction as we strive to remedy the climate crisis.

Russell advocated for a gradual reduction in paid labour to four hours a day. This, he argued, would facilitate full employment, provide more time for creative pursuits and contribute to the public good. "In a world where no one is compelled to work more than four hours a day, every person possessed of scientific curiosity will be able to indulge it, and every painter will be able to paint without starving," he wrote.

In the 1930s, Russell understandably didn't mention environmental protection – although he alluded to the human ability to alter the planet. But there's no reason we can't build on his thinking and find in idleness a climate solution.

His thesis concerns paid work. But his point could be understood as a call for less activity in general, a request to sit still. Everything we do uses energy. Doing is polluting. Doing is warming. Almost by its very nature, doing contributes to the climate emergency.

When my kids were small, we had an insightful pediatrician who would approach mild sickness with the words, "Well, we could try medication or we could do nothing." He taught me that holding back,

©Tracey Hocking

avoiding action, is sometimes – although not always – a worthy choice.

Where could idleness be introduced?

What about transportation? Environmentalists urge us to abandon gas-powered vehicles and embrace electric ones. The latter are excellent and certainly part of the solution to the climate emergency, but perhaps we need to go further.

Maybe the problem isn't just fossil-fuelled movement but movement overall – not only how we move but that we move so much.

Even driving an electric vehicle can contribute to environmental crises. Beyond the ecological impacts from manufacturing them, they can facilitate other climate-altering activities – we can take our Tesla to the butcher shop or the airport. Perhaps the deeper solution isn't travelling by electric vehicle but calling travel itself into question. Maybe the best thing we can do is the least.

In this vein, we might consider sleeping more. Asleep, we generally use fewer appliances and lights and require less hot water, heating and air conditioning. Time spent in bed is time not spent driving. Throughout Canada, an additional hour, or even half-hour, of sleep per night could represent a significant reduction in fuel – to say nothing of health benefits for sleep-deprived people.

What if we encouraged people to nap during the day? It sounds far-fetched, but emergencies require novel thinking. We could set up cots at schools and businesses, ask people to turn off lights and devices and lie down for 30 minutes. We could call it "nap club." Not everyone would participate, of course, but those who did might find it a delightful mid-afternoon refreshment.

Cities like Tokyo, London and New York now have "nap bars" and "nap cafes." Toronto has a company called Nap It Up that rents beds for 25-, 55-, or 85-minute snoozes.

As bears pose little threat when hibernating, so humans reduce their destructiveness when sleeping. Inactive, we're less harmful.

And consider that the Buddha didn't reach enlightenment until he decided to stop doing everything. He just sat down under a big old Bodhi tree!

That doesn't mean we should adopt ubiquitous idleness. Rather, we should consider selective idleness. When it comes to climate activism, for example, we require more, not less. We need to mobilize greater numbers of people and expand our influence.

But even here non-doing has a place. Environmentalists are often asked to travel to distant conferences as part of their work. They should feel free to refuse these offers. If a meeting isn't essential – and, granted, figuring out what's essential isn't always easy – they should consider staying home.

Illnesses force idleness on people. We require time in bed to recuperate; rest is non-negotiable. So, too, the climate situation demands idleness from society. We must listen to the body in sickness; we must listen to the planet in crisis. At the very least, we need to slow down.

David Suzuki is a scientist, broadcaster, author and co-founder of the David Suzuki Foundation. Written with contributions from David Suzuki Foundation Climate Change and Transportation Policy Analyst Gideon Forman.

Learn more at *www.davidsuzuki.org*.

In Praise of Idleness:
https://harpers.org/archive/1932/10/in-praise-of-idleness/

Emissions Lockdown

As countries go into lockdown over the novel coronavirus, there have been significant drops in pollution levels. Both China and Northern Italy have recorded significant falls in the pollutant and powerful warming chemical nitrogen dioxide, which is related to reduced car journeys and industrial activity.

Researchers in New York also told the BBC that early results showed carbon monoxide, mainly from cars, had been reduced by nearly 50% compared with last year, along with a 5-10% drop in CO_2 over New York and a solid drop in methane as well.

With airlines cancelling flights en masse and millions working from home, countries around the world are expected to follow this downward path – but what's likely to make a major difference to the ultimate scale of carbon emissions and air pollution is how governments decide to re-stimulate their economies once the pandemic eases. Back in 2008-09, after the global financial crash, carbon emissions shot up by 5% as a result of stimulus spending that boosted fossil fuel use.

—www.bbc.com, March 19, 2020

Dropping the Ball

Federal government AWOL in the Fraser River Estuary

by Otto E. Langer

The proposed new Richmond to Delta crossing will be a new tunnel or bridge to replace the 62-year-old Massey Tunnel. In the heart of the Fraser River estuary, it will have significant social and environmental impacts.

The non-profit Fraser Voices recently sent a brief to the BC and federal governments insisting that an eight-lane tunnel was the best option, as recommended by all Metro Vancouver mayors. A new tunnel will be less obtrusive than a bridge, more environmentally acceptable, and serve the needs of what must be a more sustainable community south of the river.

In response to our brief, Prime Minister Trudeau's Office noted that they had no role to play in an environmental assessment: such major projects were the purview of the Province of BC. If that were true, this would be a real setback for accountable and transparent environmental protection across Canada. From 1970 to 2010, the federal government led impact studies of most projects in the Fraser estuary. Unfortunately, in 2012, the Harper Conservatives destroyed that environmental protection leadership and, despite many promises to restore it, the Trudeau government seems to be desperately poor in action.

The federal government has a long list of constitutional and statutory responsibilities to manage in the Fraser estuary, including;

- The fishery resources, habitat, and water quality for the fishery as covered in the *Fisheries Act,*
- The *Migratory Birds Convention Act* to manage and protect migratory bird species and their habitat in Canada,
- The *Species at Risk Act* in this habitat area. Depleted and endangered populations of killer whales, Chinook salmon, sockeye salmon, Nooksack dace, and white sturgeon exist here,
- The *Canada Shipping Act* and national ports in Canada, including Vancouver Fraser Port,
- The *Navigable Waters Act* and the Pilotage Authorities in Canada's specified navigable waters, including the Fraser River,
- The area includes federally-owned lands including the Delta Port area, Alaksen Wildlife Refuge, Steveston Island, the South Arm river bottom, and an 80-year lease on the North Arm of the Fraser River,
- Impacts of a major transportation project that will serve the federal Roberts Bank Terminal 2 project, which is presently under federal *Canadian Environmental Assessment Act* (CEAA) review,
- The likelihood that BC will apply for federal infrastructure monies for this multi-billion-dollar project, thereby making it a joint financial project, and finally,
- Under CEAA, conduct an environmental impact assessment of a significant development that affects federal lands, federal operations, federal monies, and other federal responsibilities as above.

Why has the federal government, with all of its responsibilities in protecting and managing our estuary for fish and wildlife, commerce, and our quality of life gone to sleep at the wheel? Trudeau campaigned to reverse the cuts Harper made to our many laws affecting this estuary.

Legislation was restored in 2019 but, once again, action is lacking.

If there is anyone home in the Prime Minister's Office, Department of Fisheries and Oceans, or Environment Canada, please live up to your legal and moral responsibilities.

Otto E. Langer is a fisheries biologist and chair of Fraser Voices, organized to examine a Fraser River crossing in the Richmond-Delta area and to promote the sustainability of the Fraser River estuary.

Lemon Creek

Jet fuel spill in Slocan Valley sees environmental justice

by Otto Langer

Last month, after years of delays, Nelson Provincial Court closed the books on a *Fisheries Act* pollution case against a company for the spill of jet fuel into Lemon Creek and the Slocan River.

On July 26, 2013, a fuel tanker owned by Executive Flight Services (EFS) mistakenly drove up an abandoned logging road and rolled over into Lemon Creek, spilling about 35,000 litres of highly toxic jet fuel. The company was supplying fuel to a BC Forest Services helicopter landing site used in wildfire suppression.

Lemon Creek is a cold mountain stream that flows from Kokanee Glacier Park to join the Slocan River downstream of Slocan Lake. Attempts to mitigate the spill were slow and largely ineffective and all fish, invertebrates, and many birds and mammals within several kilometers of the creek were killed.

Local residents evacuated their homes and suffered contamination of their domestic and irrigation waters. They felt the spill was due to negligence and were frustrated that government action was inadequate to address this environmental disaster.

Weeks after the spill, Marilyn Burgoon, a Slocan Valley watershed activist, googled "jet fuel spills" and discovered VAPOR – a Fraser River group established in 2011 to keep jet fuel tankers out of the Fraser River estuary.

Once contacted, VAPOR, feeling compelled to help the people in the Slocan, were soon in the area inspecting the spill area and sharing information on how private informant *Fisheries Act* charges can be laid.

In that government seemed unwilling to hold anyone legally accountable, Ms. Burgoon laid a private informant charge under the *Fisheries Act.* The government agencies then took over the case but once again the matter stalled. At the time, the DFO office in Nelson had been closed by the Harper government. It was fruitless trying to get BC to do anything since the BC Forest Service was culpable in the matter and the BC emergency program felt clean-up costs were adequate punishment.

Many letters were sent to prosecutors and finally the federal government took over the case. The fuel truck driver was found guilty – and punished with a $20,000 fine. EFS and the province were found not guilty but the prosecutors appealed that verdict. On February 21, 2020, Nelson Courts found EFS guilty for the discharge of a deleterious substance into fish-frequented waters and they were fined $175,000. The province was acquitted of all charges related to the spill.

It is sad to note that Marilyn died two months before the case was settled. Wherever she is I hope she appreciates that she stood for the right thing and had the courage to never give up. Such dedication by citizens is hard to find. Without such champions, government will often not be held accountable and will continue to be lax on environmental protection.

This is a case where one watershed group can reach across the province for help and obtain assistance from another ENGO. Although VAPOR was not able to convince governments to keep jet fuel tankers and a terminal out of the Fraser River, they did respond to a call for help and reach across the province to help Ms. Burgoon find environmental justice in the West Kootenays.

The *Watershed Sentinel* deeply regrets the loss of Marilyn Burgoon.

Legal Warriors

In Canada, Mother Nature needs a good lawyer

by John Keller

Canadians generally like to think of themselves as fairly "green" in their approach to the environment. However, this is not so accurate. In 2013, a report released by the Center for Global Development ranked Canada's environmental protection record dead last among 27 wealthy countries - likely not a result most Canadians would be proud of if they knew.

The most common explanation given for our poor environmental record is that Canada's economy is resource-based – thus our laws prioritize economic activity over environmental protection. We know that governments need to write legislation and enact policy that enables the economy and protects the natural world; however, the natural world does not vote or have its own voice. Mother Nature needs people to represent her interests in policy making and reform, and enforcement of law.

Evidence of the relationship between weak or non-existent environmental laws and poor environmental outcomes in Canada abounds. The example of endangered species protection illustrates that laws and policies across Canada are:

- Often completely lacking (the three westernmost provinces plus the Yukon have no provincial endangered species legislation)
- Poorly considered and coordinated (in the Atlantic region 30 different provincial acts govern the protection of wildlife habitat)

And that's just on the law-making side. When it comes to enforcement, most Canadian governments don't hold themselves accountable to laws they were elected to uphold, let alone willingly enforce those laws. The end result is an ever-growing list of threatened and endangered species for which no recovery or action plan exists.

In the case of climate change, government's failure to enact effective laws results in a record that is particularly dismal. Under the 1997 Kyoto Protocol, Canada committed to reduce its GHG emissions to 6% below 1990 levels by 2012. Emissions increased by over 30% during that period.

Under the 2009 Copenhagen Accord, Canada committed to reduce its emissions to 17% below 2005 levels by 2020. Five years after signing, Environment Canada reported that target wouldn't be met. The 2015 Paris Agreement has done little in the last five years to offset the trend.

The current federal government's new promise to achieve "net zero" emissions by 2050 again moves the goalposts, this time adding 30 more years in which to not meet the stated targets. The past track record does not inspire confidence that the government takes this existential threat seriously.

It is against this level of government neglect and seeming indifference that environmental organizations (ENGOs) try to push governments to adhere to a higher level of concern and protections for the natural world. Of the many ENGOs across Canada, there are only a few that specifically use the legal system to pursue positive environmental outcomes.

Accountability

Ecojustice is the largest such organization. Having started out 30 years ago as Sierra Legal Defense Fund in the aftermath of the Exxon Valdez oil spill in Alaska, Ecojustice now has over 25 lawyers in five offices across the country. Our mission is to use the power of law and the courts to hold governments and polluters accountable when they abuse or fail to protect the environment.

It is a daunting task, made more difficult because governments often actively resist efforts to advocate for better environmental outcomes.

As one of the few approaches that forces polluters to act when they otherwise would not, litigation has been the focus; however, the process can be lengthy and expensive. Government and corporate legal teams have vast resources to defend their actions in court, and Ecojustice must be prepared to fight for years and in several levels of courts from appeals all the way to the Supreme Court if necessary.

However, litigation is not the only avenue to effect change. Increasingly, Ecojustice is turning its attention to reform of Canada's weak environmental laws. Governments are asking for our legal advice when drafting or revising legislation; sound, enforceable legislation means better environmental outcomes at the outset and helps avoid litigation.

Ecojustice also pursues law reform through litigation, seeking a reinterpretation of current laws by incorporating environmental legal principles through court victories. Two examples of these principles are the polluter pays and the precautionary principle.

The polluter pays principle means those who produce the pollution or damage bear the cost of clean-up. While this may seem self-evident, it took, for example, a judgment from the Supreme Court of Canada, informed by the polluter pays principle, to ensure the costs of reclamation for abandoned oil wells maintain priority in bankruptcy proceedings, and that oil and gas companies cannot simply walk away.

The precautionary principle states that when a practice or product may cause harm to people or the environment, you do not need to have scientific certainty before precautionary measures or approaches are taken. While this would seem an obvious and prudent course of action for government, there are dozens of toxic substances that are banned in other countries for which our federal government merely relies on the assurances of chemical companies to assess risks to human and ecological health. It is hard to believe, but that's how it works. Ecojustice is constantly challenging this situation in the courts, and pushes for meaningful revisions to the *Canadian Environmental Protection Act (CEPA).*

Setting a precedent (or two)

In addition, Ecojustice is working to establish novel precedent or principles in law that support better environmental protection. We recently sought to intervene in the BC Court of Appeal, in support of a protester arrested at the Trans Mountain pipeline protests. We sought to support the defense against a finding of contempt by using "climate necessity," a legal theory that justifies certain actions such as civil disobedience as defensible when those actions are taken on behalf of the planet, and after alternatives have been exhausted.

Recently we filed a case against the Ontario government on behalf of six young people claiming that their Charter-protected rights to life, liberty and security of the person are being violated by the provincial government's rollback of emissions regulations and failure to act more aggressively against emissions and the impacts of climate change. A victory would offer a new legal avenue to force governments to act responsibly to address the climate emergency.

While our laws and government resolve are a long way from where they should be to adequately protect the environment, progress is being made both inside and outside the courtroom.

We joke that we are working towards a day when governments take the lead on environmental protection and we can close the doors for lack of need, but we are not holding our breath.

John Keller is committed to protecting the environment and is a long time Ecojustice employee.

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Rebooting Building

Engineering stirs on planetary crises

by Gavin MacRae

Shifting to a low-carbon future will require houses, apartment blocks, office towers, schools, hospitals, and more to be redesigned and renovated to be carbon and energy neutral, or negative.

Cities will need to be overhauled to become human-scaled, with more and better public transportation. To weather already baked-in climate change, sea walls must be erected to hold back rising oceans, bridges constructed to withstand more frequent and severe floods, infrastructure fortified against precipitation, storms, and heat.

Basically, a reboot of much of the built world will be needed, requiring vast investment, strong government policy – and legions of engineers.

Enter Engineers Declare, a growing movement of engineers who recognize the urgency of the climate and biodiversity crises, and the enormity of the task ahead for the profession – and who commit to "meeting the needs of our societies without breaching the earth's ecological boundaries."

Government of Canada Building, Charlottetown, Prince Edward Island

This federal government project consists of a four-storey office building with one level of underground parking, located on a brownfield site. Recycled materials are used in the structure and throughout the building, with many sustainable features such as photovoltaic cells, fuel cell for emergency power, geothermal heating and cooling, and an in-slab radiant piping system.

On the south façade of the building there is a Shadovoltaic LS-3 glass louvre system, with a power output of 11.16 kW.

That, says their declaration, will require engineers to "re-imagine our buildings, cities and infrastructures as indivisible components of a larger, constantly regenerating and self-sustaining system."

Duty to act

"Once you realize what the science is telling you and the scale of the challenge, even after you've spent your life trying to do good engineering and be aware of the impact on people and the environment, you put your foot on the accelerator," says engineer Mike Cook, organizer of the UK branch of Engineers Declare and a partner at international engineering consultancy Buro Happold.

Cook says he's seeing a new awareness of the planetary crises dawn in the engineering world, driven by the moral duty to act, and also because clients are asking for certainty in a changing climate.

"Industry, investment business, insurance, relies on a level of predictability for the future or it won't invest. It won't take the risk, or it won't insure you because it doesn't understand the risk. Our whole

system relies on, depends on, predictability of the future. Once people feel it's not predictable, they're really worried, and they're not sure they want to invest in a new building or hospital or something. Is it the right investment? Is it in the right place? Will it still be valuable in 60 years? [Clients are saying] 'help me!' And engineers are in a good place to help."

> 91% of surveyed students cared about working for an ethical company, and 67% considered it unethical to work a job that contributed to climate change.

Engineers Declare is part of a larger parent movement, Construction Declares, which includes engineers, architects, project managers, and other vocations in the construction sector, in 18 countries and counting. Since its start in the UK, Engineers Declare has grown to include groups in Australia, France, Singapore, and, as of September 2019, Canada.

Engineer Sunny Ghataurah is the president of AES Engineering, a founding signatory to Canadian Engineers Declare. For AES, Ghataurah says viewing their work through the lens of climate and biodiversity informs the company's decisions on project design, material selection, and qualifies the projects they pursue.

"Ten years from now climate change won't be a conversation, it will be the prerequisite of design," he says.

An important tool toward that end in British Columbia, says Ghataurah, is the BC Step Code, a section of the provincial building code that provides engineers, architects, and builders a set of standards and regulations to construct energy efficient buildings. To date, 64 of BC's 162 local governments have voluntarily adopted the Step Code, representing the large majority of new residential construction in the province.

The top "step" of the code requires new buildings to be Net Zero Ready, meaning the structure is energy efficient enough that when an on-site source of renewable source of energy is added, such as rooftop solar panels, the building can produce as much energy as it consumes for its operation, averaged over the coarse of a year. When that happens, the building is considered Net Zero.

A similar and further goal is zero carbon, when a building produces or procures carbon-free renewable energy equivalent to the carbon emissions associated with its operation.

Ghataurah expects that in future, Net Zero Ready will be the minimum, and zero carbon will be the norm.

"I'd like to see the industry move towards positive generative type projects," Ghataurah says, "where constructing a new building reduces your carbon footprint and generates energy, so that we can put that back into the grid. Where not constructing the building would be more detrimental than constructing the building."

Under pressure

Engineers can affect emissions not only by how they design and build, but by what they don't design and build. Australia's Engineers Declare proclamation includes a tweak to the language that reflects this, with signatories vowing to "Evaluate all new projects against the environmental necessity to mitigate climate breakdown, and encourage our clients to adopt this approach."

Engineering firms that sign on to visible, harmful projects could increasingly see their clients and employee talent dwindle, or even have their social licence revoked.

In Australia last December, activists campaigning to stop the construction of the Carmichael coal mine targeted engineering consultancy GHD, a contractor for the project's backer, Indian multinational Adani Group. Over a dozen protests at GHD offices reportedly had the firm in "crisis mode," just as a string of Australian municipalities voiced their disapproval by vowing to steer spending away from GHD and other Adani contractors. Days later, GHD announced to staff that the company had concluded their work with Adani Group, ending a decade-long association.

Tellingly, the crisis was caused in part by internal pressure, after employees bombarded GHD management with questions and complaints about the company's involvement in the controversial coal project.

"The firms that haven't started to recognize the importance of planetary impact and aren't able to prove that they're making significant changes towards that being more positive, I think engineers,

Continued on Page 16 ⇨

⇦*Building continued*

young engineers, won't want to work for them," says Cook. "Why would ethically-minded young engineers go work for a firm ... that has a carbon footprint the size of an elephant?"

Millennial(s) shift

Bloomberg reports that in the UK, fewer engineering graduates are pursuing careers in oil and gas, citing uncertainty about the future of fossil fuels, and qualms about a sector they view as less than ethical. To boost recruitment, some oil companies are offering higher starting salaries, and overhauling their promotional material to appeal to a younger demographic.

Market research firm Trendence UK found that 91% of surveyed students cared about working for an ethical company, and 67% considered it unethical to work a job that contributed to climate change, according to Bloomberg.

Engineer John Clague, a former president of the province's engineering professional body, Engineers and Geoscientists BC (EGBC), and emeritus professor in the department of earth sciences at Simon Fraser University, says at SFU, he's noticed a shift.

"Just recently we are seeing a lesser enrolment in the traditional fields of geology that support the metals and hydrocarbon industries. We're seeing more enrolment in more the environmental or science side of things, so geotechnical and environmental."

Clague notes, however, that a transition from fossil fuels won't happen overnight, and says engineers in the petroleum sector have a legitimate role to play in that transition.

> "Engineers can affect emissions by how they design and build, and by what they don't ."

In a 2017 survey by Engineers and Geoscientists BC of its members, three-quarters of respondents regarded climate change with a degree of urgency, but 43% found it "difficult" or "very difficult" to consider climate change in their work. Barriers to action included lack of mandate, client demand, support, time, and resources. Only one in four felt the EGBC was doing enough to support their efforts.

The EGBC formed a climate change advisory group in 2018, to direct policy development and changes to practice guidelines. The group is due to submit an action plan in November, with the goal of enabling a proactive response to climate change by the EGBC.

A matter of interpretation?

In a 2018 article in *PolicyNote*, David Huntley, physics professor emeritus at SFU, and environmental engineer Romilly Cavanaugh, argue that the duty of engineers to act is already spelled out in black and white, in the ethics codes of engineering professional organizations. For instance, the Engineers and Geoscientists BC ethics code states members shall: "hold paramount the safety, health, and welfare of the public, the protection of the environment, and promote health and safety within the workplace."

"Taken at face value, the above-mentioned [code] of ethics mean that none of these professionals should engage in the design or construction of any new fossil fuel infrastructure," Huntley and Cavanaugh write.

"I've seen their advertisements, you know, 'Engineers and Geoscientists BC: keeping you safe every day,'" says Huntley. "It really troubles me. They should tell people the way it is – engineers, by developing fossil fuels and burning them, are not keeping the world safe."

But change appears to be coming. Cook says that in the UK, it's now difficult to attend an engineering conference or gathering that doesn't have climate emergency response as a main theme. "So we can't be accused of hiding our heads in the sand. Now it is important that we open our eyes fully to the stark reality, and don't put our sunglasses on to the unpalatable truth."

Professionals in the construction sector can visit *www.engineersdeclare.com* to join the declaration.

Sponsored by glasswaters foundation

Conservation

Fresh & Salty

Scientists get on the same page to protect deep-sea life

A survey of over 100 deep-sea researchers has established priorities for protecting the world's "largest and least explored biome."

The deep sea, defined as 200 metres or deeper below the ocean's surface, represents 95% of the volume of the ocean, and harbours complex ecosystems teeming with life. Yet this vast and understudied environment faces mounting human-caused threats.

To determine key areas of conservation concern, a survey by an international group of researchers, published in *Nature Ecology and Evolution*, collated 112 responses from questionnaires sent out to deep-sea scientists worldwide. The results showed "wide consensus" among experts that the first priority should be to monitor larger organisms, while conservation of vulnerable habitat-forming species, such as corals, mollusks, and sponges, was also a top tier priority.

"We prioritized larger organisms in part because we know more about them than we do about other aspects of the ecosystem," said Paul Snelgrove, a co-author of the survey and a research professor in the departments of ocean sciences and biology at Memorial University of Newfoundland, by email. "Some of these organisms are also good indicators of changing conditions – like canaries in a mine – and we expect change will occur soon in these environments." Snelgrove added that some larger organisms are "more charismatic" and so more likely to engender public support for ocean conservation.

"Given the heightened sensitivity of deep-sea biota… we cannot afford to wait, and we cannot assume that species will cope well," said Snelgrove. "We need policy that will promote sustainability of the most widespread and least understood environment on Earth."

—Gavin MacRae

Crash course hatched to halt freshwater ecosystem collapse

With biodiversity vanishing from rivers, lakes, and wetlands at alarming rates, a new scientific paper published in *BioScience* outlines an emergency recovery plan to reverse rapid decline in the world's freshwater species and habitats.

Developed by the World Wildlife Fund, International Union for the Conservation of Nature, Conservation International, the University of Cardiff, Carleton University, and others, the plan calls for urgent steps to tackle threats that have led to an 83% collapse in freshwater species populations, and the loss of 30% of freshwater ecosystems since 1970 – ecosystems that provide water, food, livelihoods, and protection from floods, droughts, and storms.

The six-point plan prioritizes already proven solutions: letting rivers flow more naturally, reducing pollution, protecting critical wetland habitats, ending overfishing and unsustainable sand mining in rivers and lakes, controlling invasive species, and safeguarding and restoring river connectivity.

Other measures include treating more than 20% of sewage before it is flushed into nature, avoiding dams on the world's remaining free-flowing rivers, and expanding and strengthening protected areas in partnership with local communities.

"Nowhere is the biodiversity crisis more acute than in the world's rivers, lakes, and wetlands – with over a quarter of freshwater species now heading for extinction," said Dave Tickner, WWF-UK chief freshwater advisor and lead author of the paper.

—Carleton University press release

Coronavirus

We are organisms in an environment

by Kurt Cobb

A close friend of mine, a professor of English literature, has been researching American philosopher John Dewey, whose book *Quest for Certainty* captivated me so much many years ago that I read it again right after I had finished it the first time. My friend has been reminding me why I found Dewey so profound while shedding new light on the philosopher's thinking.

©Miguel Brieva

Dewey, it turns out, is one of the few thinkers in American life who absorbed the true import of the work of Charles Darwin. Dewey reminds us that, quite simply, Darwin posited that we humans are organisms in an environment just like every other organism.

Dewey's star faded after World War II. American and world society have since lapsed into a narrative that puts humans above and outside nature, protected by technological advancements that supposedly shield us from nature's demands and vicissitudes. The general narrative is that we are heading into a push-button, voice-activated technocratic paradise. (I think of the various Star Trek television series as popular cultural reflections of this view.)

But, the first pandemic in a century is forcefully and sadly reminding all of us that Darwin was right about our place in the natural world, more specifically, that we will never be outside of it.

That the world is "wildly unprepared" for this pandemic is in part a result of our belief the we are on a separate journey from the rest of the natural world, headed toward a perfected existence in which nature obeys all of our commands and bothers us not at all. Why prepare for something that is merely a product of nature? We have the technology to overcome it, don't we? There must be a pill, right? Actually, wrong.

Those who understand human vulnerabilities have been sounding the alarm for years. But the idea that our entire way of life could be dramatically disrupted worldwide simultaneously simply was not on the radar of most governments – at least not enough to get them to stockpile even the most basic medical supplies; face masks come to mind.

There is much talk of creating a vaccine and doing it quickly. But such an endeavor can take more than a year and even more time to manufacture and distribute. There is less talk about the unhealthy lifestyles and chronic disease such as heart disease and diabetes that result from that lifestyle which might need to be addressed if we are going to cope better with the world of microorganisms we inhabit. There is even less talk that those at the bottom of the economic ladder are the most vulnerable and that the wealth gap and the gap in access to health care it implies are actually a huge public health problem for all of us.

The very way in which we live – constantly pressing on the edge of wilderness to develop it and exploit it – puts humans potentially in contact with millions of viruses from which will come the next pandemic. And, the next one will likely come much sooner than 100 years from now.

If we continue to think of health as the absence of illness, of illness as something that is prevented by a pill or a shot – and if not ultimately prevented, treated by a pill or a shot – we humans won't make the necessary changes as a global society to better withstand more frequent pandemics.

Robust health, not techofixes, is the best way to confront the biological perils of the natural world in which we participate. Such a focus would, however, take a complete rethinking of who we humans are, namely, organisms in an environment. Will the coronavirus awaken any more of us to this fact?

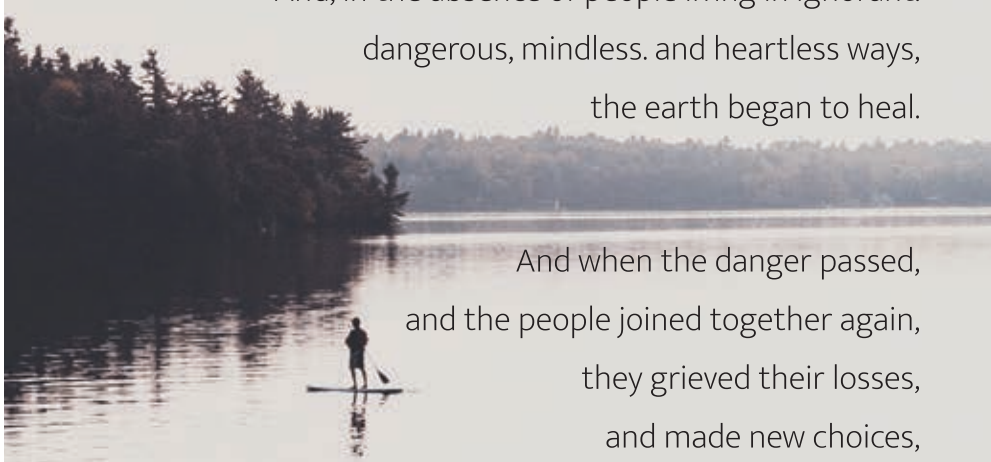
Kurt Cobb is a freelance writer and communications consultant who writes frequently about energy and environment. He is the author of an oil-themed novel entitled *Prelude* and has a widely followed blog called Resource Insights, where this piece was first published.

And the people stayed home

And the people stayed home.
And read books,
and listened,
and rested,
and exercised,
and made art,
and played games,
and learned new ways of being,
and were still.

And listened more deeply.
Some meditated, some prayed, some danced.
Some met their shadows.
And the people began to think differently.

And the people healed.
And, in the absence of people living in ignorant.
dangerous, mindless. and heartless ways,
the earth began to heal.



And when the danger passed,
and the people joined together again,
they grieved their losses,
and made new choices,
and dreamed new images,
and created new ways to live
and heal the earth fully,
as they had been healed.

—Kitty O'Meara

©Filip Mroz

Return to the Grassroots

The magazine you hold in your hands emerged 30 years ago out of local efforts to protect the forest ecosystems of a small island on Canada's west coast — and all along it's been our mission to give voice to the grassroots environmental movement in BC.

In these times of globalized everything and cataclysmic change, the quiet, dedicated work of everyday people acting together to make positive changes in their communities and the world is not the stuff of front-page news. But it's exactly these kinds of daily efforts multiplied all over the planet that result in victories that wouldn't otherwise happen: an ecosystem restored, a sacred place protected, a community gaining self-reliance, a corporation or government held to account – and on and on.

This issue of the Watershed Sentinel celebrates the people who are putting in the work because they care, and the connected, living network – the grassroots – that they make up. You know who you are, and we know how important you are - especially at this moment in history.

©Ronan Furuta

Coastal Guardians

Stewardship and sovereignty on land and sea

by Celina O'Connor for Coast Funds

First Nations in the Great Bear Rainforest and Haida Gwaii regions of present-day British Columbia, and across the entirety of what is now called Canada, have been stewarding their lands and waters for millennia. Since the onset of colonialism, Indigenous Peoples have worked tirelessly to assert their continued role and responsibility as stewards of their territories for future generations.

Starting with the Haida Nation, and what later became the Coastal Guardian Watchmen Network, the work of monitoring and safeguarding Indigenous lands and waters by the people who know them best has recently taken the form of Indigenous Guardian programs.

In a September 2019 *Sierra Magazine* article, author Heather Smith highlights the pivotal work of Coastal First Nations in laying the groundwork for Indigenous Guardian programs that now span the country.

Smith explains how, following a successful and multi-pronged effort to block clearcutting on Haida Gwaii in the 1970s and '80s, the Haida established one of the earliest modern Guardian programs: "When tourists, lured by tales of the Great Bear Rainforest and totem poles in the mist, began appearing at Haida Gwaii's sacred places, the Haida took shifts patrolling and camping at the sites."

In the 1990s, following lengthy cross-national discussions, the Haida began collaborating with other First Nations in coastal BC, ultimately forming the Coastal First Nations Great Bear Initiative with the goal of undertaking coast-wide marine and forest stewardship initiatives. Subsequently, in 2005, the Coastal Guardian Watchmen Network – a nine-member alliance of First Nations along BC's North and Central Coast and Haida Gwaii – was established to solidify and expand the role of local stewardship programs.

Guardian Watchmen are often referred to as the "eyes and ears" of the land and sea. They are hired by their nations to serve as stewards and protectors of their lands and waters, and can now be found along the Central and North Coast of BC, as well as other parts of Canada. As described by the Coastal First Nations Great Bear Initiative: "Coastal Guardian Watchmen play a critical role in […] ensuring resources are sustainably managed, that rules and regulations are followed, and that land and marine use agreements are implemented effectively."

Guardian Watchmen programs are also key to asserting Indigenous sovereignty over the ecological and cultural management of their territories. Ross Wilson, stewardship director for the Metlakatla First Nation, is quoted in the *Sierra* article in describing how, "When our province comes and says, 'We are going to put this in this specific area,' we can say, 'No, our land plan doesn't say that. By the way, it's under conservancy. By the way, we have a management plan for that.'"

Since their inception by the Haida in coastal BC, Indigenous Guardian programs can now be found across the country, such as the Inuit Guardians in the Gjoa Haven hamlet of Nunavut, the Misipawistik Cree Guardians in Manitoba, and the Miawpukek Nation Guardians in Nova Scotia, amongst many others. An interactive map featured on the Indigenous Guardians Toolkit website illustrates the ongoing proliferation of Indigenous Guardian programs from coast to coast to coast. *(www.indigenousguardianstoolkit.ca)*

Watershed Sentinel appreciates the support of Coast Funds in publishing this article, which originally appeared on *www.coastfunds.ca*. Visit Coast Funds to learn more about inspiring stories unfolding in the Great Bear Rainforest and Haida Gwaii.

A Fish-friendly Fraser

Reflections on a summer in the field

by Meghan Rooney

This past summer, I worked for Watershed Watch Salmon Society, visiting pump stations and floodgates along the lower Fraser River to collect data on water quality and fish species.

Did you know that over 1500 kilometres of valuable salmon habitat in the Fraser Valley are blocked by outdated flood infrastructure? Watershed Watch Salmon Society has mapped over 150 sites along the Fraser River where floodgates and pumps prevent fish from accessing side channels and streams they once used for rearing and overwintering. I collected data at over 70 of these sites to help make the case for opening up these blocked habitats for salmon.

Floodgates and pump stations?

I have lived in the lower mainland my entire life, and have passed many of these structures countless times without questioning their purpose or their impacts.

Along the lower Fraser River, pump stations and floodgates work in tandem with dikes to prevent flooding of land. They are often relatively small structures placed at the mouth of side channels (small streams, rivers, creeks, and sloughs) to help control the level of water in these channels from influences such as spring freshet, high tides, or runoff from heavy rainfall. Controlling the depth of the water in these side channels allows municipalities to keep water deep enough that it can be drawn upon for irrigation, but low enough that it doesn't flood surrounding land.

Flood boxes or floodgates are opened to allow for the passive drainage of water from side channels into the Fraser River, when the Fraser River is low. They can also be opened to allow water to enter into the side channels from the Fraser, though this is not often the case. When the Fraser River is high, the gates are closed to limit flood risk. Closed floodgates are a physical barrier to fish passage.

Pump stations are used to force water out of side channels, so they can be operated around the clock, no matter the depth of the Fraser. Pump stations can force water out of the side channels rapidly, to reduce flood risk during periods of heavy rainfall, for example. Pump stations are not only physical barriers to fish and other aquatic wildlife, but many fish that enter the pumps are ground up and killed. The rapid drainage of water out of the channel can also result in fish stranding and death.

Flood control and salmon

Juvenile salmon require freshwater habitats to rear and some species, such as Chinook, can spend several years in freshwater before heading out to sea. Side channels provide areas of refuge, with slower flows than the Fraser, and an abundance of food. Without access to these habitats, fish may not grow as large before migrating out to sea, making them more prone to predation or disease.

Floodgates and pump stations also alter the hydrology of streams, negatively affecting the quality of the habitat in these side channels. Altered flow can lead to increased sediment accumulation, stagnant water that is low in dissolved oxygen, increased water temperatures, and increased concentrations of pollutants.

This can create conditions unsupportive to native fish, and often invasive fish and plant species proliferate once introduced. Over the summer, I visited 70 small streams in municipalities from Richmond to Chilliwack. I documented species of fish present, if any, and measured the pH, dissolved oxygen, temperature and salinity of the water, both internal and external to flood control structures. The fish sampling and water quality testing I performed this summer will provide baseline data to help us identify sites to focus on for future initiatives.

On top of the data I collected, I learned a lot about these small tributaries of the Fraser and our relationship to them. Here are a few of my takeaways.

Neglected waterways

Many of these smaller streams have been heavily altered and have been thought of as drainage systems rather than habitat for fish and wildlife. Many waterways didn't even have names or watershed codes, which made locating them a bit tricky!

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A couple of fast salmon facts

- Coho can be identified by the sickle-shaped anal fin with a black/white leading edge and parr marks that are centred on the lateral line.

- Hatchery fish can often be identified by their lack of an adipose fin. Though hatcheries may release some fish with their adipose fins still intact, most have their fin clipped off prior to release.

1. Field Assistant Elise and volunteer Javier counting fish at a floodbox near YVR
2. Garbage along Fraser - Contents of a fridge dumped next to the Fraser River in Richmond.
3. Juvenile Coho: Many juvenile Coho, including this one, were caught in Chilliwack near the Great Blue Heron Reserve.
4. Pacific Lamprey: This little lamprey was found in Langley in a waterway surrounded by industrial activity.
5. Floodgates: Two side-mounted floodgates control the flow of water into this channel in Pitt Meadows.
6. Field Assistant Elise and Meghan counting fish at Maple Creek in Port Coquitlam.
7. Pump station - Water flows out of a side-channel into the Pitt River after pumps are turned on.

Photos #1-5, #7 ©Meghan Rooney, #6 ©Lina Azeez

YEA

Teens are turning climate concern into action

©Watershed Sentinel

©Watershed Sentinel

by Gavin MacRae

The attendance at Youth Environmental Action's first climate strike wouldn't have filled half a school bus. The second drew 300 people. By the third strike, roughly 3000 people — kids through to seniors — clogged the streets of downtown Courtenay.

The exponential growth is evidence of the global success of Swedish climate activist Greta Thunberg and her Fridays for Future climate strike movement. But in the Comox Valley, the growth is also testament to the energy, work, and organizing of the student-led Youth Environmental Action (YEA for short).

The ranks of the group have grown as well, from a handful of founding members to around 30. YEA is now steered by a council of 10 members, each with a specific focus, such as communications, social media, and event coordination. The council meets regularly at the Courtenay library for after-school planning sessions.

The *Watershed Sentinel* sat down over gelato with Will Hatch, YEA council member and a student at Highland Secondary School, to discuss what's next for the group, and what it's like to be a teenager growing up in the climate crisis.

"So YEA doesn't just organize marches," Hatch says. "We do give speeches at the marches, and we organize them, but we are also creating a podcast. We're working on the first six episodes and we're going to release it on Spotify and our website. It's called Generation Change."

YEA also organizes year-round beach clean-ups, has a tree planting program in the works and, Hatch says, is planning an elementary outreach program.

"We would like to get kids in high school to go to kids in elementary school and talk about the climate crisis. Not like persuade them or anything, but just start a conversation." Hatch laughs. "You know, get 'em while they're young."

Their efforts have not gone unnoticed. YEA were finalists for the 2019 #YouRock award from the Comox Valley Chamber of Commerce, and the students have met with officials from the Comox Valley municipalities, the Comox Valley Regional District, and the school board, to suggest specific policy measures.

YEA is also part of a new consortium of politicians, community groups, and individuals working to draft a climate framework and action plan for the Comox Valley.

In his school, Hatch says maybe two-

thirds of students are concerned about the climate, but many don't know what to do about it, and YEA offers a way to turn gnawing concern into concrete action.

"It's obviously scary. But you're also born into the most important time in human history. And if you want to change the world, you can literally save the world, basically. You don't need Superman to do it."

"It's obviously scary. But you're also born into the most important time in human history. And if you want to change the world, you can literally save the world, basically. You don't need Superman to do it."

But just as in society at large, the school has a minority faction of climate deniers that Hatch presumes take cues from their parents.

"It's kind of sad at this point that some people still don't agree. Because the people who don't agree, they are giving an excuse for the people who are unsure to do nothing…. I think our generation has enough people who do believe in it. There's no excuse for doing nothing."

Hatch predicts a tipping point in climate action is coming soon, as his generation enters adulthood, and says some YEA members are basing their future careers around climate change. His activism and plans to become an environmental economist are backed by his climate conscious family, but not all YEA members enjoy such support, Hatch says. "My grandpa likes to say we need a mobilization just like World War II."

Still, Hatch says the climate crisis is taking a toll.

"I know that with every decision I make, or if I see my family eating beef, if I see a truck drive by, I think about it…. And I know some people are very anxious because of the climate crisis. Anxious enough to not want to have kids."

To cut their personal carbon footprints, Hatch says most YEA members have become vegetarian.

"I think we have to stay positive because it's such a negative situation. And that's exactly why you should stay positive. Although I know some of us are awfully pessimistic. Personally, I think it's totally possible. Human innovation has saved us in the past even though this problem is much bigger than any other. Humans are surprisingly innovative creatures. Yeah, I think we can do it."

For adults wanting to support YEA, Hatch says: "Come to the marches. Simple as that. We want everyone who can to be there."

For information see *www.youthenvironmentalaction.com*

Nesters' New Year gift to Gabriola

On January 1, Nesters, Gabriola Island's main grocery store, eliminated plastic shopping bags in response to Michelle MacEwan's work with the Environmental Stewardship Program at Gabriola Elementary School.

As Manager of Gabriola Island Recycling Organization (GIRO) and an avid enviro-activist, Michelle worked with the Grade 7 students in 2019 on a consumer survey focussing on Gabriolans' use of plastic packaging and shopping bags. The survey was completed by 300 people, about 10% of the adult population on Gabriola, and the results were sent to Vice President Sam Corea at Nesters head office in Vancouver. Michelle and Sam had several discussions in 2019 to determine ways to reduce plastic packaging and bags at Nesters on Gabriola, and the first action was to eliminate the take-home plastic shopping bags.

One month into 2020, after speaking to store manager Steve Chamberland and cashiers, Michelle confirmed that Gabriolans have been very supportive and quick to adjust to bringing their own reusable bags.

Michelle's Environmental Stewardship Program work with the Grade 7s on Gabriola is highlighted by the students' ensuing efforts to go 'plastic free' for the month of July 2019, and featured in an inspiring CBC radio interview you can find on the GIRO website at: *www.girodepot.com/portfolio/zero-waste-challenge*

—Susan Yates

Mining in Canada

Communities fight extraction that creates profits from loss

by Maggie Paquet

Professor - Doctor - just plain Joan - Kuyek has spent many decades working for justice - social justice for people and communities, and environmental justice for Mother Earth. Her work proves the modern mantra of "think globally, act locally" as the best way to effect social or environmental change.

Joan grew up in Winnipeg. After graduating with an Honours Bachelor of Arts degree from Carleton University, she was hired by the Company of Young Canadians Organizing Committee. The work introduced her to "community development." Anxious to put what she was learning into practice, she moved to Kingston, where, for five years, she worked for the Kingston Community Project on many issues, including housing. She was even elected to the Kingston City Council.

In 1970, she moved to Sudbury. With all its mines and smelters, it was Canada's largest mining community. She thought it looked like Mordor with all the blackened hills around it. There were about 30,000 blue-collar workers. The heavily male workforce led to the organization of Women Helping Women. Her work focused on the social and environmental impacts of mining. She played a key role during a lengthy strike in 1978-9, and worked at the Sudbury Community Legal Clinic.

From 1990-98, she was Program Coordinator of a highly successful program for impoverished children and families in the Donovan-Flour Mill area of Sudbury, sponsored by the N'swakamok Native Friendship Centre. In 1995, she was awarded an honourary Doctorate in Social Work by Laurentian University in recognition of her work to achieve social justice.

After almost 30 years in Sudbury, Joan moved to Ottawa, where she became the founding National Coordinator of MiningWatch Canada in 1999.

Since retiring from MiningWatch in 2008, Joan has been teaching at universities as a contract instructor in Social Work curricula, and providing organizing advice to mining-affected communities.

Cominco Copper Mine, Highland Valley, British Columbia

©Mikofox Photography

Part of the "justice" in the title of her latest book (reviewed in the Dec/Jan issue of *Watershed Sentinel*), *Unearthing Justice: How to protect your community from the mining industry*, refers to trying to get mining companies to pay their fair share of the true costs – to society and to the Earth – of mining.

If we were to respect the full costs of producing metals, we would ask: Do we really need this metal?

The book begins with the statement: "Mining is the story of loss. All kinds of loss. Of lives. Of land. Of water. Of livelihoods. Of good governance. Of future possibilities. In Canada, we have created an economy that is dependent on extraction that creates profits from loss.… We depend on metals.… If we were to respect the full costs of producing metals … we would ask: Do we really need this metal? Can it be obtained by recycling?… What damage will its production do to the environment?… To future generations? How much will taxpayers be required to subsidize it?… What will be the social impacts on people living in mining communities?… Will there be any health problems related to industry contaminants? When the money leaves the area, will city councils find it difficult to provide the infrastructure and services the community needs?"

Understanding the relationships

We need to understand the relationships of all mining industry activities: staking a claim, exploration, feasibility studies, environmental impact statements, permitting, mine construction and operation, processing, tailings and what to do with waste rock (particularly if it is toxic or acid-generating), smelting, closure, perpetual maintenance after closure or abandonment, and how the legacy of toxic wastes will be managed.

In order to effectively interact with government and the mining industry to protect our communities., we need to learn about the legal and enforcement milieu, the financial world and how the stock market may influence whether a mine is developed or shut down, and importantly, the local and Indigenous history and culture of the area.

It can get complicated. There is the critical issue of community capacity – staff time, expertise, money – to respond to companies or negotiate with government. Kuyek says all these things stress the need for a variety of experts to assist communities to determine how to protect their people and environment.

Case studies in *Unearthing Justice* include Yukon's Faro Mine (lead-zinc mine and one of Canada's largest abandoned mine sites); the Giant Mine (former gold mine on the shore of Great Slave Lake just outside of Yellowknife, NWT with a legacy of almost 250,000 tons of arsenic oxide underground and 95 hectares of arsenic-laden tailings above ground); the Mount Polley tailings dam collapse (affecting the local town of Likely and many local Indigenous nations, effects on the Fraser River and its salmon fisheries); and Nova Scotia's Westray Coal Mine disaster (where 26 miners were killed in March 2004). These present brutal examples of what mining can cost – in human and ecosystem health, in money – lots of money – with taxpayers footing the bill, and in damage to traditional lands and waters of many Indigenous nations and communities. The case studies detail responses by communities to get some degree of justice (or not).

The story of Raven coal mine

Close to my home on Vancouver Island is the story of the proposed Raven coal mine. Back in 2009, Compliance Coal wanted to develop a coal mine in the east-central part of the Island above Fanny Bay and Baynes Sound – BC's premier shellfish aquaculture area – and, to the west in Port Alberni, a coal port to ship coal to Asia. Homes downhill of the mine and to the shore of Baynes Sound rely completely on groundwater wells for water. The shellfish industry relies on clean water in Baynes Sound to grow and sell their product. The entire region is very important for the agriculture and tourism industries.

The mine's footprint would encompass at least two salmon streams. A major portion of the road from the mine to the port at the head of Alberni Inlet (critically important salmon habitat) is narrow, winding, and goes through world-famous Cathedral Grove; it is the only road from the east side of Vancouver Island to the thriving tourism economies of Tofino and Ucluelet. At least 11 Indigenous nations – from K'omoks to Tseshaht to Tla-o-qui-aht – as well as communities from Courtenay/Comox to Port Alberni and beyond would experience significant negative social and environmental effects.

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⇦*Mining continued*

Community members in Port Alberni attend meeting hosted by BC and Canadian Environmental Assessment agencies to discuss plans for a coal port in the harbour.

The company said the mine would initially provide 200 jobs and then over 300 jobs throughout the region for 16 years and would pay high salaries. Concerned community members from Courtenay to Port Alberni got together and formed a group called CoalWatch. One of the first things we did was hire Joan to advise us on how to get the wider community involved.

Over the next nearly five years, and drawing on the expertise of community members and with further advice from Joan, who wrote a socio-economic review of the costs and benefits to the affected communities and an analysis of the company's claims, we prepared and distributed fact sheets. Community meetings were held in Courtenay, Fanny Bay, Union Bay, and Port Alberni to packed houses. In conjunction with funds raised through organizations mentioned below, as well as community dinners and auctions, and from the Alberni Environmental Coalition, we were able to pay Joan and develop a community survey for volunteers to canvass residents and businesses.

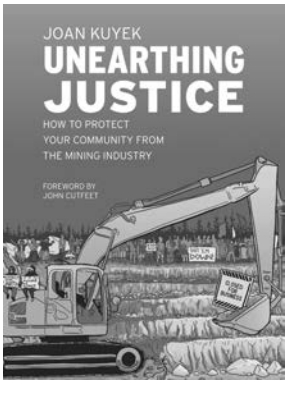
With expert volunteer assistance, a website was developed to keep people informed throughout the federal and provincial government environmental review processes. A local hydrogeologist provided analysis of the groundwater regime and how it would be affected by the underground workings of the mine. UVic's Environmental Law Centre pitched in with legal advice. West Coast Environmental Law's Environmental Dispute Resolution Fund helped pay our expenses. Two intrepid residents of Port Alberni secured scientific experts to critique the company's claims and reviewed thousands of pages of company, government, and public submissions. They made presentations to Port Alberni City Council on the health and environmental effects of hundreds of huge coal ore trucks going through town and having a coal port in the heart of town. Throughout it all, Joan remained available to offer further advice and encouragement.

The final paragraph of the book states: "In March 2015, the company withdrew its application … and in April 2016, Raven became the first mining proposal ever terminated by the BC Environmental Assessment Office."

So justice can be achieved for your community with good advice, some creative fund-raising, plenty of volunteer and scientific expertise, and the dedicated steering committee function that a community group like CoalWatch provided.

Maggie Paquet has been a member of the Environmental Mining Council of BC, the Canadian Environmental Network's Mining Caucus, and more recently, a director of CoalWatch.

Unearthing Justice:
How to Protect Your Community from the Mining Industry
Joan Kuyek
Paperback $26.95
272 pages plus chapter endnotes and index
ISBN 978-1-77113-451-4
Between the Lines, www.btlbooks.com



⇦*Fraser continued (P22, 23)*

Most of the streams I visited had been channelized and some look like man-made ditches. Many had garbage strewn on their banks or in the water. Sometimes there would be an oily sheen on the water's surface, or an unpleasant odour, or dead sticklebacks floating on the surface.

But this was not the case at all the waterways I visited. Some have only been moderately impacted by human action. Others have active streamkeeper groups, municipal staff or others working to protect and restore the waterway for fish and wildlife. It would be amazing to see more of these waterways receive the attention of a devoted streamkeeper group. The efforts of local citizens can make a huge difference.

Sticklebacks are hardy fish

Some sites looked so uninhabitable, I almost felt it was a wasted effort to set and place a trap and return to check it the next day. Yet more often than not, I would pull up the trap and find two to over 100 stickleback.

Stickleback are tough little fish, and they were the most common species we observed in these waterways for a reason! They can handle the low dissolved oxygen conditions that are common in many of these waterways in the summer months.

Juvenile salmon: scarce

We would get so excited when we pulled up a trap and it had something other than stickleback and sculpins in it (unless it was invasive, of course). Out of roughly 70 waterways we visited this summer, we found salmon at only five sites. Unsurprisingly, the waterways where we found salmon either had an active streamkeeper group or a hatchery, or were in waterways that flow through protected areas, such as a nature reserve.

Out of roughly 70 waterways we visited this summer, we found salmon at only five sites.

Explore! (But watch out for bears!)

Many of the sites I visited this summer are on dikes that also serve as public walking trails. I really recommend going out and walking the dikes along the Fraser, Pitt, and Alouette Rivers, when you get the chance. It's truly beautiful and you might just get to see something new. Over the summer, I saw many species that I have not seen before, including a lamprey, green heron, a bittern, and a wandering garter snake.

I had almost completed my fieldwork this summer when I headed out to Pitt Meadows to do some water quality testing. I was surprised that thus far, I had not seen a bear while sampling. The site I was visiting on this day was surrounded by tall grasses and blackberry bushes. I rode my bike to reach the site as it was a bit of a way down the trail. After sampling on one side of the dike, I proceeded to head back up and over to the other side to stick the probe in the water when I heard a splash. Out from behind a blackberry bush that was hanging over the waterway, I saw a black bear's big head move slowly through the water (right next to where I was going to sample) and then move into the middle of the channel.

I was on a popular walking trail and the bear had zero interest in me, but I was probably less than 30 feet away, which is too close. So I hopped on my bike and headed off without finishing my sampling. The next day while sampling near DeBoville Slough in Port Coquitlam, I was lucky enough to spot a mother bear with her two cubs, this time from a much more comfortable distance.

Who would be real winners here?

When visiting these little waterways, I would picture what they would look like if efforts were made to improve them for salmon, by replacing outdated flood control infrastructure with fish-friendly alternatives and by improving water quality and wildlife habitat with restoration efforts.

Making these changes would not just benefit salmon. They would also improve habitat for other species, increasing opportunities for wildlife viewing, fishing, and Indigenous cultural practices. Some waterways could provide urban locations to go kayaking or canoeing if invasive aquatic vegetation is removed. Restoration activities can also increase the ability of the land to absorb water, reducing flood risk and improving water quality. So to me, it sounds like the ones who have the most to benefit from improving these waterways, is us.

Meghan Rooney has worked for Watershed Watch Salmon Society as their fieldwork coordinator since completing her Masters in Ecological Restoration in 2018. She mainly works on riparian restoration and water quality monitoring projects, in addition to hosting events and coordinating volunteers.

A Little Town in PEI

Leading the way with wind energy

by Susan MacVittie

Most people wouldn't expect the smallest province in Canada, Prince Edward Island to be one of the leaders of wind power in the world, but it's true — 25% per cent of the Island's electricity is produced by wind.

Because the province lacks a suitable landscape for hydro-electric and has few non-renewable natural resources, it has relied on expensive and polluting oil and diesel electric plants for the rest of its energy needs. Yet, what the Island lacks in non-renewables it makes up for in one plentiful renewable resource – wind.

In 2006, PEI began investing in wind generation. Now roughly 98% of power generation on PEI comes from the eight wind farms dotting the pastoral countryside. Usually all electricity generated in PEI remains on-island, but when demand increases beyond capacity, or when the demand is lower than the generating capacity, PEI buys, sells or swaps electricity with off-Island partners.

Some of the renewable energy credits associated with PEI wind farms are sold on the open market and processed in North America through green energy retailers.

The history of wind as a viable energy resource on PEI goes back to the 1970s when the Institute of Man and Resources published a paper, "Prince Edward Island Wind Energy Program." It detailed a program involving wind speed testing, the integration of wind energy conversion systems, applications for farms, and testing of machines.

The Atlantic Wind Testing Station was formed in 1981 by the Institute on the windblown western tip of PEI known as North Cape, and was designated the Government of Canada's wind energy research station. In 1983, the world's largest vertical axis wind turbine, a 500 kW machine, was installed for testing purposes. Renamed the Wind Energy Institute, the site is now home to the Renewable Energy Research facility, the North Cape Wind Plant (Atlantic Canada's first commercial wind plant), and the Hydrogen Village – Canada's first grid-independent sustainable energy system for northern and remote locations.

Although PEI is a leader in wind energy, the majority of electricity consumed in the province comes from the underwater electric cables that span 17km to neighbouring New Brunswick, which generates electricity from a mix of nuclear, fossil fuels, and hydroelectricity. In an effort to decrease dependency on New Brunswick, there is a ten-year strategy for PEI to reduce energy use and establish cleaner and locally-produced energy sources.

Summerside

The coastal community of Summerside is moving towards renewable energy in various ways. Like most communities in PEI, the municipality relied on diesel generation and additional power via New Brunswick. As the municipality grew, the demand for electricity rose, and it wanted to become less dependent on imported oil – subject to rising prices and environmentally unsustainable – so in 2009 it opened its own wind farm.

Summerside Electric's wind-powered generation now supplies 12 megawatts of power, providing 100% of the city's nightly needs and about 46% of its daytime needs.

Yet, the most unique thing about Summerside is that it owns its electric utility. In 1895, a group of Summerside merchants met to discuss the feasibility of establishing an electrical generating plant in the thriving town, and in 1896, it was incorporated as the Summerside Electric Company Limited. The new company was capitalized at $25,000, divided into 250 shares of $100 each, and further empowered to increase its capital stock to $100,000.

125 years later, Summerside Electric has multiple power purchase contracts, local wind and diesel energy generation, and, recently, solar farms and industrial-scale batteries. The city now wants to invest in electric vehicles and charging infrastructure, and they know increased energy needs will need to be met.

The city has partnered with the federal and provincial governments, as well as Samsung Renewable Energy, to build a $69-million, 21-megawatt solar power farm, with an attached 20-megawatt hour capacity battery system.

Phase 1 of solar panel and battery installation has been in operation since 2017 at the Credit Union Place, a sport and recreational facility used by many of the surrounding communities. The Credit Union solar/battery system shaves off some of the higher peaks in the building's fluctuating energy usage and is expected to cut about $100,000 off their $380,000 electricity bill annually.

This spring, Phase 2 will begin – a solar farm consisting of 65,000 solar panels and eight tractor-trailer sized batteries on 80 acres of land owned by the city.

Dubbed the Summerside Sunbank, Phase 2 is expected to lessen the amount of power the city buys from outside sources by about $2 million per year. If the solar farm produces more power than the city needs at that moment, then it can shunt its excess into the battery. Similarly, extra power from the wind turbines can also be stored for later use.

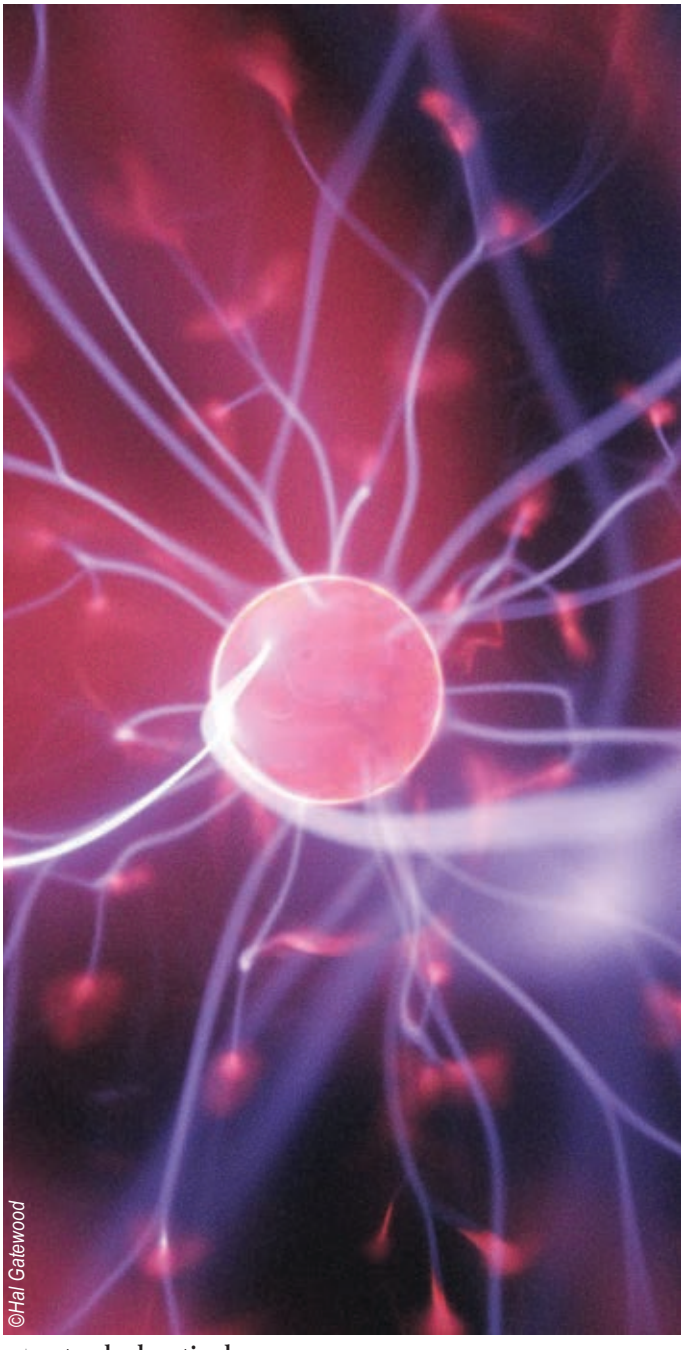
Besides increasing solar capacity, Summerside is also using innovative software and technology. BluWave-ai, an Ottawa-based artificial intelligence company, is in partnership with the city to pilot its artificial intelligence software. Conventional grid software may not be able to keep up with the integration necessary to keep the various renewable energy systems working efficiently.

The aim is for Summerside to increase its grid efficiency by up to 20%, and if BluWave-ai is successful, the result could potentially unlock new opportunities throughout North America – and beyond.

Susan MacVittie is *Watershed Sentinel's* east coast correspondent based in Prince Edward Island

Local Power

Why is BC Hydro blocking a renewable revolution?


©Hal Gatewood

by Dave Mills

Local communities could generate affordable, clean power — and free themselves from fossil fuels. To an energy monopoly, that's a threat.

As viral outbreaks and wavering stock markets add to the threat of climate breakdown, it feels like we're edging closer to the type of crisis last seen during the Great Depression or World War II. Many are calling for the type of intervention – a "New Deal" or a "wartime effort" – that governments used to combat last century's catastrophes.

BC is home to shovel-ready projects that could cut emissions, strengthen local communities and restore some of the power and self-determination of Indigenous peoples. What's lacking so far is political will.

In the *New York Times* bestseller *Drawdown*, groundbreaking research by one of the best scientific teams ever assembled concluded that if we act right now, we have both the time and technology to stabilize our deteriorating climate. Despite the battles we've lost, a big reason for their conditional optimism is readily available renewable energy.

There's an assumption BC is powered by "clean" hydro, but the reality is most of the energy we use is fossil fuel: gasoline, diesel, natural gas and furnace oil. Electrifying transport and buildings is our biggest opportunity to cut emissions. It could save households thousands of dollars a year, and create an army of good-paying local jobs.

But it will require a lot more juice. A pressing question is: do we rely on last century's destructive mega dam model to create it? If we don't build new renewable capacity quickly, we could find ourselves charging electric cars with coal power purchased from Alberta or Wyoming.

But rather than encourage people trying to generate clean, local electricity, BC Hydro is cancelling existing contracts and trying to kill new projects in the cradle.

The urgent case for renewables

Globally, renewable energy is a game-changer for our climate. In free market settings, it now outcompetes conventional fossil-fuel generation systems like coal-fired or continuous cycle gas turbines. Since power generation is the single largest source of GHGs on the planet, making the switch to clean energy drastically reduces emissions while stimulating local economies.

In western Canada, a drop in the cost of photovoltaic cells means large-scale solar farms and rooftop solar are now the most affordable forms of new power. That's led more than 2,000 BC households to join BC Hydro's net metering program – where customers use "smart" meters to connect solar panels on their roof to the grid, earning a credit on their bill that slowly offsets the cost of the equipment.

It's a start. But without accessible financing, tax credits, or other incentives, most families can't afford the up-front cost of solar panels. And now BC Hydro is trying to stifle the net metering program, complaining that some customers are generating too much clean power. Yes, you read that right: too much!

The fight for Indigenous utilities

Meanwhile, Indigenous communities are leading the way in developing ambitious and affordable clean power projects. But BC Hydro has been indifferent at best, and in some cases actively hostile.

The Tsilhqot'in Nation recently cut the ribbon on a new 1.25 megawatt solar farm west of Williams Lake. Built on an old sawmill site, the project employed an all-Tsilhqot'in construction crew and will provide steady revenue to the nation once BC Hydro flips the switch.

It's one of five Indigenous-owned projects announced by BC Hydro in 2018, before it abruptly cancelled its Standing Offer Program. Since then, First Nations have had to use whatever leverage they have with the province to negotiate one-off electricity purchase agreements.

The Upper Nicola Indian Band got BC Hydro to agree to buy power from its solar project near Merritt, but only because the utility wanted to build a major transmission line through the community. The Fort Nelson First Nation is now pursuing a geothermal project with a special permit from the province. Other communities have had the door slammed in their face.

Sacrifice and loss

The desire to improve people's lives and fight climate change inspired Ktunaxa energy champion Marty Williams to propose a large scale solar farm in his home community of ʔaq̓am – a project he's been working on for more than 10 years. I listened to his story while attending Clean Energy BC's Generate 2019 conference. I'll be interested to know if you feel the same conflicting emotions of inspiration and anger after you hear it.

Ktunaxa territory encompasses a vast stretch of land in what we call the Kootenays. It's an almost indescribable place comprising broad valleys and high peaks with beautiful intermontane plains. Ktunaxa territory is where the Columbia, the most important river west of the Great Divide, originates. It's also the breadbasket for British Columbia's hydro-electric generation system. Half of all the electrical power produced in BC comes from the Kootenays.

British Columbians have derived huge benefits from, and may even feel a sense of pride in, the tremendous amount of stored hydro power we control. That's probably because it didn't cost us our land or livelihoods. When we travel through Nakusp, Revelstoke or Nelson today we see majestic lakes, huge slow-moving rivers and impressive dams. Ktunaxa elders like Marty see underwater graves, flooded village sites, unuseable hunting territories and rivers without salmon.

A chance for climate justice

The proposed 26 megawatt Ktunaxa solar farm could be an affordable source of renewable power twenty times the size of anything built so far in the province. ʔaq̓am has a construction partner signed and ready to go. They've selected a site and completed an archeological survey. The project would sit under power lines already running across the reserve. But BC Hydro refuses to sign.

Adding insult to injury, a visiting bureaucrat told the community at ʔaq̓am they should scale their project down. To dream small. And maybe, they said, hook up some solar panels to the local casino. This in a year when reservoirs across BC were low (proving to be a recurring phenomenon) and we imported $55 million worth of dirty energy to make up the shortfall.

All the Ktunaxa are asking for is a chance to generate the power needed to tackle the climate crisis, which threatens us all. A

Continued on Page 34 ⇨

⇦*Power continued*

chance to employ their people in economic development opportunities that don't pollute or destroy their territory. The flippant response from our government makes my blood boil.

Fiddling while Rome burns

A couple of weeks before she was replaced by Bruce Ralston, energy minister Michelle Mungall was overheard musing that independent power was on the run and, if we really did need solar in BC, we could trade California for it.

Mungall's backwards take is galling. A joint UVic/ UBC/Oregon State study released last fall confirms we'll need twice our current generating capacity to make the transition to electric transportation. With electric car adoption rates in BC already surging, I think the government is underestimating the public's desire to be part of the solution.

We are also up against the entrenched power of BC Hydro, whose monopoly allows it to dictate how energy is produced in BC. The corporation's mandate is to make as much money as it can today – not plan for the climate crisis.

There's also immense bureaucratic inertia. The top executives at Hydro and its energy trading arm, Powerex, are the highest paid and most powerful civil servants in the province.

The fight for Local Power

When local communities are partners in creating new power, our grid not only becomes more resilient – it becomes more democratic. Investing in solar panels on your roof does more than power your car. It feeds the money currently swallowed by behemoths like Exxon to local tradespeople.

Now, if utility-scale Indigenous power were to start replacing the fracked gas we use to heat our buildings, BC's future only gets brighter. Why wouldn't we join with Indigenous communities fighting for climate justice and local power: they're the ones leading the charge.

The Ktunaxa, Tsilhqot'in, Nlaka'pamux, Nuu-chah-nulth, Tahltan, Dunne-za, Cree: these are people whose land BC invaded, pillaged and flooded to build the old economy. Yet they are offering to help us make the transition because our collective futures depend on it.

We have the technology to do what we need. What we lack is the political will. Or more accurately, we lack an organized constituency willing to battle the powerful interests that stand in our way. That's why Dogwood is building a new Local Power campaign: to kickstart the renewable revolution by removing obstacles to community-driven clean electricity generation.

When local people take control of their own energy, emissions go down and opportunities go up. This is how to grow our democracy – and slow the kleptocracy. It's time to get to work rewiring our communities so we can free ourselves from fossil fuels and strengthen our communities for what's to come.

Dave Mills is an organizer with Dogwood. He lives in Union Bay. Read more of his work at ***https://dogwoodbc.ca/news/author/dmills/***

Join the Local Power campaign: ***https://dogwoodbc.ca/petitions/local-power/***

A Fighting Chance

Partnership to protect two million acres of caribou habitat

West Moberly First Nations

A partnership agreement to recover the endangered central group of southern mountain caribou has been signed by Chiefs of the West Moberly First Nations and Saulteau First Nations and Ministers of the British Columbia and Canadian governments.

The agreement has a 30-year term and is the first of its kind in Canada.

Approximately two million acres of land will be placed into protected areas, where Caribou habitat will remain undisturbed by new industrial development activities. The partnership agreement is centred around the Klinse-za (Twin Sisters) mountains and the Klinse-za caribou herd. In 2013, when the herd numbered just 16 animals and was facing extirpation, West Moberly and Saulteau began a maternal penning program to give newborn calves a better chance of escaping predators.

Along with habitat restoration and a combination of scientific and traditional management measures, the Klinse-za population has now risen to over 80 animals. The partnership agreement promises long-term support for these recovery efforts, including multi-year funding for maternal penning, habitat restoration, and an Indigenous Guardians program.

Background

West Moberly's Dunne-za (Beaver) ancestors entered Treaty No. 8 in 1914. The Treaty promises protection for wildlife and the ability to hunt as freely as before entering the Treaty. There was to be no forced interference with the First Nations' traditional way of life. West Moberly Elders remember a time when a "sea of caribou" could be seen moving throughout the Peace region, with herds so large the animals were "like bugs."

But since then, the Peace region has been besieged by decades of habitat destruction. Megadams, clearcuts, coal mines, pipelines, oil and gas wells, along with tens of thousands of kilometres of power lines, roads, trails, and seismic lines have destroyed sensitive habitats, severed migration routes, and upset predator-prey relationships. In the 1970s, Elders imposed their own hunting moratorium to help the caribou recover. West Moberly members have not harvested the animals since that time.

In the early 2000s, West Moberly began working with Elders to gather traditional knowledge about caribou ("wah tzee" in the Dunne-za language). This knowledge was recorded in community reports, such as "I Want to Eat Caribou Before I Die." In 2009, West Moberly went to court to protect the Burnt Pine herd of southern mountain caribou from a coal mine proposed within sensitive alpine habitat in the absence of any provincial caribou recovery plan. The court suspended the project on the basis of West Moberly's Treaty right to harvest caribou according to its traditional seasonal round.

West Moberly then joined together with Saulteau First Nations and Wildlife Infometrics in 2013 to begin a maternal penning program for the Klinse-za herd. The program has expanded to include habitat modelling, habitat restoration, wolf removal, caribou feeding, scientific research, and, now, habitat protection under the partnership agreement.

Southern mountain caribou populations remain small, scattered, and vulnerable. Obstacles to recovery abound. But the new resources, protections, and management approaches under the partnership agreement demonstrate hope that a "sea of caribou" might once again roam the Peace region, and that traditional ways of living with caribou might survive.

West Moberly expresses deep gratitude and thanks to all of the individuals and groups that have worked on the partnership agreement and are collaborating in various ways to support the recovery of southern mountain caribou.

Wild Times Challenge of change

by Joe Foy

As I write this Wild Times column I am under home lockdown with my wife and several family members due to the ongoing worldwide pandemic. By the time you read this column, no doubt, the global and local situation will have changed in surprising ways. This pandemic has got me thinking about how to cope with the challenge of rapid change.

I learned early on in life that whenever things get moving too fast to handle, a walk in a wild place can help put things in proper perspective. There's something very comforting about being in the quiet presence of a forest of thousand-year-old trees or a house-sized mossy stone or a waterfall in a fern-draped canyon. Such places are an anchor to cling to in the current of turbulent change.

They speak to us of the passage of time measured not in hours, months or years – but in centuries, millennia and time out of mind. Their company is powerful medicine for the mind, body and spirit.

But the reality for many of us is that we're self-isolated in our homes to do our part to help safeguard the community. What can we do to receive much-needed solace and comfort from the natural world? Here are a few suggestions.

Look out your window or stand in your backyard or on your balcony. Can you see the mountains? In the Lower Mainland where I live we are surrounded by a number of spectacular peaks. These peaks have seen a lot over the millennia – standing witness to the changing challenges faced by countless generations of people living here.

Take time to learn about the peaks you can see from your home – especially take the time to learn their Indigenous names and the meaning of those names. Individual peaks often have numerous names relating to the diverse Indigenous communities and languages and dialects surrounding them. The internet is a great place to start your home-based education. In doing so, you may feel more grounded to this place where we all live together.

Can you see wildlife from your home? Ever wonder why certain species share your neighbourhood with you? It's all about the habitat. For example, like pretty much everyone in the Metro Vancouver region, I can see the great crow migration every day at sunset as they congregate from all points into a stream of air-borne avian commuters headed to their night destination in Burnaby near Still Creek.

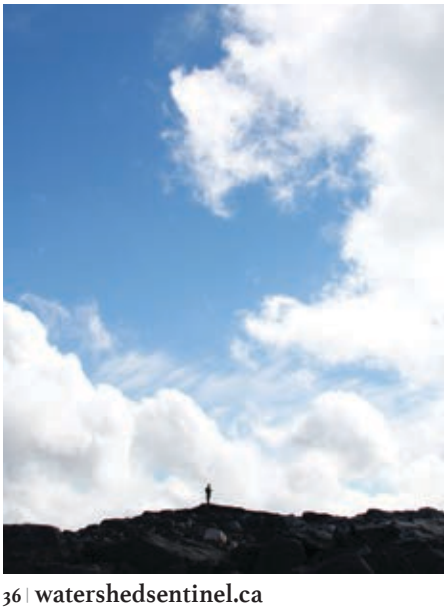
For crows and other wildlife, tree cover and natural corridors such as streamside riparian areas and parks are important. Check out Google Earth to get a better sense of your local habitat areas and how they're supporting the wildlife you can see from your home.

This pandemic and the restrictions we are currently under will eventually subside.

When you're able to walk out of your home again, what special wild place will you spend some time in to heal and recharge? Making plans now can have a soothing effect – like seeing an oasis on the horizon.

As for me, I am dreaming of backpacking into a wild valley in the heart of the Canadian Cascades. I'm looking at the maps now. Starting to feel better already just thinking about it.

Joe Foy is the protected areas campaigner for the Wilderness Committee.



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